REMARKS

Claims 1-17 and 22-25 are pending in this application, claims 18-21 having been cancelled and claims 22-25 being newly added by the above amendment. Claims 10-17 have not been considered as being drawn to a non-elected species. Of these claims, claims 1 and 4 stand rejected under 35 USC §102(e) as being anticipated by Voss et al; claims 2, 3, 5 and 9 stand rejected under 35 USC §103(a) as being unpatentable over Voss et al. in view of Pospichal et al.; and claims 6-8 stand rejected under 35 USC §103(a) as being unpatentable over Voss et al. in view of Russell et al. Further, dependent claim 3 stands rejected under 35 USC §112, second paragraph, as being indefinite for the use of the language "leak path."

In view of the preceding amendments and the following remarks, these rejections are traversed and reconsideration of this application is respectfully requested.

The Examiner has required restriction between Group I, claims 1-17, drawn to a fuel cell system, classified in class 429, subclass 26, and Group II, claims 18-21, drawn to a method for controlling the relative humidity of the fuel cell, classified in class 429, subclass 34. Further, an election of species has been required between Group I-1, claims 1-9, drawn to a fuel cell system with a two-position valve that helps to provide humidity control, and Group I-2, claims 10-17 drawn to a fuel cell with a fixed restriction valve responsive to the cathode exhaust flow.

A provisional election has been made to prosecute the invention of group I, species I-1, claims 1-9. Applicant hereby affirms this election. Claims 18-21 have been cancelled as being drawn to the non-elected invention. However, Applicant submits that the species of Groups I-1 and I-2 should be examined together because the fixed restriction valve of independent claim 10 has been considered by the Examiner in dependent claim 2.

The term "leak path" in dependent claim 3 refers to the embodiment of the invention that when the two-position valve is in the closed position a minimal amount of the cathode exhaust gas is still allowed to flow through the valve. Support for this can be found in at least the last sentence in paragraph 36 of the specification. The leak path can be provided in various ways including an orifice through a valve body, or by not closing the valve completely when it is in the closed position. To further make this clear, dependent claim 3 has been amended above to state that the leak path allows the cathode exhaust gas to flow through the valve. It is therefore respectfully requested that the §112, second paragraph, rejection be withdrawn.

Applicants' claimed invention is directed to a fuel cell system that employs a two-position valve through which the cathode exhaust gas flows. The valve position is controlled based on the operating temperature of the stack so as to help provide humidity control within the stack. Applicants' background discussion provides a detailed explanation of the requirements for humidity control within a fuel cell stack, and the relationship of temperature and pressure thereto. Applicants' background discussion also describes the use of back pressure valves that are multi-positional analog type valves that are complex and costly of the type referred to in paragraphs 32 and 38 of the specification.

Independent claim 1 has been amended above, to state that the valve is controlled based on the operating temperature of the stack to provide humidity control within the fuel cell stack. Support for this can be found at least in paragraph 33 of the specification. Applicant submits that the prior art of the record does not teach or suggest a discrete two-position cathode exhaust gas back pressure valve that operates for this purpose in this manner.

U.S. Patent Application Publication 2004/0258968 to Voss et al. discloses a humidification system 10 for humidifying a cathode inlet air flow from a compressor 16 using the cathode exhaust gas flow 24. The cathode exhaust gas flows through a heat exchanger 30 within the system 10 so that it is heated by the cathode air flow 18 from the compressor 16 so that it is able to absorb more humidity. A by-pass valve 102 is provided in the cathode exhaust gas flow line 24 to by-pass the heat exchanger 30 when the cathode air flow 18 may be too cold, i.e., is lower than the temperature of the exhaust gas flow 24 (paragraph 37). A temperature sensor can be employed to measure the temperature of the air flow 18 to determine when the by-pass valve 102 should be opened.

Applicant submits that the by-pass valve 102 is not the same as Applicants claimed two-position valve. First, the by-pass valve 102 is not necessarily a two-position valve, and there is no indication in Voss et al. that it needs to be or is a two-position valve. Voss et al. states in paragraph 37 that, "[i]t should be understood that the particular type and details of the by-pass valve 102 and the control scheme will be highly dependent upon the parameters and requirements of each particular system 10, and that there are many known suitable by-pass valves 102 and control schemes therefore." Applicant submits that there is no teaching in Voss et al. that the by-pass valve 102 is a two-position value. Contrary, it is likely that the by-pass valve 102 is a multi-positional control valve that allows some flow through the heat exchanger 30 and some flow around the heat exchanger 30.

Further, the by-pass valve 102 is <u>not</u> controlled based on the temperature of the stack 14, but is controlled based on the temperature of the cathode input air flow. Applicant submits that there is no teaching in Voss et al. of putting the by-pass valve 102 in one position when the temperature of the stack 14 is below a predetermined

temperature and putting the by-pass valve 102 in another position when the temperature of the stack 14 goes above the predetermined temperature. Therefore, Applicant submits that Voss et al. cannot anticipate independent claim 1, especially as amended.

Pospichal et al. discloses a fuel cell system that employs compressor surge prevention by electronically mapping the compressor for discharge pressure verses mass air flow. The system 10 includes a fuel cell module 14 having a fuel cell stack. A back-pressure valve 24 and a by-pass valve 30 are positioned in parallel in the cathode exhaust gas line 26. Applicant submits that there is no teaching in Pospichal et al. that either of the valves 24 and 30 are two-positioned valves as claimed by Applicant. Applicant submits that the by-pass valve 30 may be a two-positioned valve that is used as a safety valve to eliminate the pressure on the cathode side within the fuel cell module 14, such as the type discussed in paragraph 15 that operates as a safety device.

Further, the Examiner states in the second paragraph on page 6 of the office action that the by-pass valve 30 teaches Applicants' claimed fixed restriction valve of dependent claim 2. Applicant respectfully submits that both the back-pressure valve 24 and the by-pass valve 30 can be opened and closed, as thus neither valve 24 or 30 is a fixed restriction valve as claimed by Applicant and clearly discussed in the specification.

Applicant submits that Pospichal et al. cannot be considered prior art against Applicants' claims because it is commonly owned by General Motors Corporation with the instant application. Particularly, 35 USC §103(c) states that, "subject matter by another person, which qualifies as prior art only under one or more of subsection (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter of the claimed invention were, at the time

the invention was made, owned by the same person or subject to an obligation of assignment to the same person." Applicant submits that Pospichal et al. would be considered prior art under §102(e), and the inventors in Pospichal et al. and the instant application were all under an obligation to assign their inventions to General Motors at the time the inventions were made.

U.S. Patent No. 6,378,484 issued to Russell et al. discloses a system and method for controlling a direct injection stratified charge engine during transitions between homogeneous and stratified operating modes. Russell et al. has nothing to do with controlling the temperature and the pressure within a fuel cell stack using a back-pressure valve, especially a two-positioned back-pressure valve. Therefore, Applicant submits that Russell et al. cannot provide the teaching missing from Voss et al. to make Applicants claimed invention obvious.

In view of the preceding amendments and remarks, it is respectfully requested the §102 and §103 rejections be withdrawn.

It is now believed that this application is in condition for allowance. If the Examiner believes that personal contact with Applicant's representative would expedite prosecution of this application, she is invited to call the undersigned at her convenience.

Applicant is filing concurrently with this Response a Power of Attorney to Prosecute Applications before the USPTO (appointing practitioners associated with the

Customer No. 65798 power of attorney and changing the Correspondence Address as identified below) along with a Statement under 37 CFR 3.73(b).

Respectfully submitted,

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Dated: 10/31/06

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